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*China Crop Environment Brief: 1977*  
*Second Report, July 1977*

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## FOREWORD

This is the second in a series of China Crop Environment Briefs which are being prepared to assist in the refinement of crop production estimates of the Peoples Republic of China. These all-source experimental analyses will be produced monthly through early December 1977. Additional ad hoc briefs will be prepared as warranted by developments. The scope and format of the briefs may vary according to the nature of conditions reported and the perceived utility of the findings.

Within the CIA, cooperative efforts of the Environment and Resource Analysis Center (ERAC) of the Office of Geographic and Cartographic Research and the China Division of the Office of Economic Research facilitated the preparation of this brief. In addition, informal consultations were held with the Foreign Agricultural Service, U.S. Department of Agriculture. The brief was written by a multidisciplinary team housed in ERAC--composed of personnel from both CIA organizations--representing the disciplines of geography, economics, agronomy, and meteorology.

## METHODOLOGY

All intelligence sources-- [REDACTED] meteorological data as well as traditional sources such as human intelligence reporting, translations, and the open literature--are being exploited to produce integrated crop environment analyses. The combination of methodologies used is evolving and will be refined and expanded as experience is accumulated and new data inputs become available. A more complete statement of the methodologies employed will be published later.

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KEY POINTS

Environmental conditions in the Peoples Republic of China through June 1977 reveal a more complex pattern than was evident earlier in the crop season. The effects of early drought conditions do not seem as severe or widespread as earlier press statements suggested, but significant crop growth problems are evident.

- Northeastern China apparently has been most seriously affected by drought and there appear to be extensive areas with soil moisture deficiencies.

- [REDACTED] crossed many of the major crop-growing areas in northern, central and eastern China. They reported that irrigated crop conditions were generally good, but that many areas of unirrigated crops were suffering from deficient soil moisture. 25X1C

- Continuing high water conditions and localized flooding were observed in the middle Yangtze River basin, and on 30 June damaged rice crops were seen in northern Kiangsi Province.

- Sharply conflicting reports have come from different localities in Kwangtung Province. Combined with other intelligence sources, they indicate localized patterns of severe drought in some areas, while other areas nearby are relatively unaffected.

- Harvesting of winter grains was well under way north of the Yangtze River basin by mid-June.

Note: This paper was produced by the Office of Geographic and Cartographic Research. Comments and questions may be directed to [REDACTED] Code 143, extension 2097. 25X1A

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DETAILS

The northeastern Chinese provinces of Heilungkiang, Kirin, and Liaoning -- which produce about 10 percent of the national grain output -- apparently have been most seriously affected by drought. Extensive areas in all three provinces have experienced below normal precipitation over the past 2 years, with above normal precipitation and near normal temperatures reported for the last three months (see Appendices A and B and Figure 4). A press statement of 19 June claims that the drought in Heilungkiang Province was "unprecedented in scope and duration," with those areas most seriously affected lying in the central and northeastern parts of the province. Fragmentary reporting indicates that in some localities replanting was required and that unusual amounts of irrigation water had to be applied before planting an area of nearly 135,000 hectares in central Heilungkiang. Widespread areas with low water conditions [REDACTED] 25X1D

25X1D [REDACTED] Spotty emergence patterns of spring and summer crops were seen in limited areas of the three provinces in June. Although the Chinese press reports that the situation was eased over much of Kirin Province by heavy rainfall from 28 May to 1 June, drought persisted in the major rice-growing section in the southeastern part of the province and in the usually drier southwest.

25X1C Winter wheat harvesting was under way in early June over large areas of northern China, the country's main winter wheat growing area. [REDACTED] the crop generally was in good condition where irrigated, but unirrigated crops were exhibiting drought damage; in scattered areas the effects of the drought were so severe that little or no yields are expected. [REDACTED] 25X1D

25X1D [REDACTED] widespread areas in Shantung, southern Hopeh, Honan, Shansi, and Shensi Provinces were deficient in available surface water and that water levels were extremely low in southern Shantung, northern Anhwei, and Kiangsu [REDACTED] 25X1D In mid-June, the Chinese reported that water in reservoirs had receded and the water table was low in Honan, yet [REDACTED] 25X1C wheat stands in the eastern part of the province were in good to excellent condition in

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late May and early June. Favorable crop conditions in Honan and southern Shansi were observed on LANDSAT imagery in May (see Figure 3); by the first week in June the harvest of winter grains was observed. [REDACTED] corn was growing well in the vicinity of Peking and to the southwest in Hopeh Province as of mid-June and that irrigated spring wheat in northern Hopeh looked good in early June.

The Chinese press admitted that poor water control in many places in Anhwei Province -- presumably in the north -- does not permit adequate irrigation for "comparatively great natural disasters" such as the recent serious drought. Yet record wheat harvest levels were expected throughout much of central Anhwei and in one locality in northern Anhwei. [REDACTED] wheat crops seen in northern Anhwei in early June were in good condition with uniform stands and full heads.

Continuing high water conditions observed along the middle Yangtze River basin, particularly northward toward central Anhwei, indicate availability of adequate irrigation water for most fields in that area [REDACTED] Chinese press reports and meteorological data, however, indicate that heavy downpours since the beginning of June have caused waterlogging and flooding problems in northern Hunan Province. [REDACTED] the high water and localized flooding was present in mid-May, and [REDACTED] X1C [REDACTED] confirm the existence of an abundance of water [REDACTED] also observed flooded fields and localized areas of crop damage in northern Kiangsi Province on 30 June. Some low-lying fields of damaged rice had been plowed under and cattle were grazing the muddy rice. Farther to the east in Shanghai Municipality and southern and central Kiangsu Province, [REDACTED] C [REDACTED] on 5 June the harvest of tall, uniform stands of wheat with large heads was actively under way and that the wheat harvest in northern Chekiang was almost complete. LANDSAT imagery of these same areas on 12 June confirms the presence of favorable crop conditions.

The Chekiang Provincial Service reported torrential rains in the central part of the province on 16 and 17 June. The possibility

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of more heavy precipitation was forecasted for the southern part of the province from "typhoon no. 1" (Tropical Storm Ruth). The storm moved north through the South China Sea, hit the Chinese coast about 16 June, and began to dissipate as it moved northeastward and merged with a stationary front off the coast. This front, with a series of small, low pressure centers, may have produced heavy rainfall in the Yangtze River basin during the 7 to 10 day period preceding 24 June. On 23 June, the Fukien Provincial Service reported high water and flooding, but control was achieved with a massive influx of labor.

Agricultural conditions in Kwangtung and much of southern China vary locally with some areas apparently seriously affected by drought and other areas nearby relatively unaffected. Sharply conflicting reports have come from different localities within Kwangtung, where rice is the dominant grain crop. Although the province has claimed a bumper winter wheat harvest, losses have been reported in the early rice crop because of the drought in Kwangtung and insect infestations in both Kwangtung and neighboring southern Fukien Province, but these losses may be localized. Evidence indicates that in some places in northeastern Kwangtung the drinking water supply was inadequate and the spring harvest was poor and that the government found it necessary to bring in food to alleviate the critical situation -- an unusual measure normally taken only when there is dire need. Meteorological data for this same area indicate that extremely low precipitation was received during the six months between December 1976 and early May 1977. Most areas [REDACTED] 25X1D [REDACTED] in eastern Kwangtung seem to have adequate water supplies, yet infrared reflectance levels from crops in many areas are not as strong as would be expected; this may be an indication that the usually effective irrigation systems could not meet the increased demands from the recent drought.

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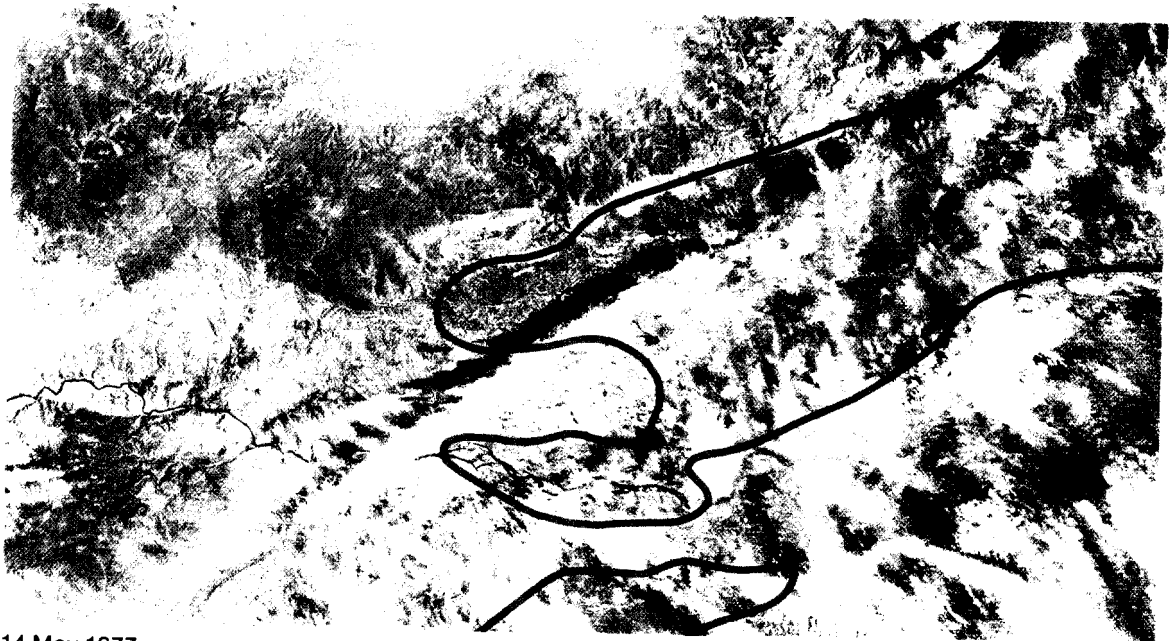
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**LANDSAT II Imagery  
Shansi-Honan Border**

Figure 3



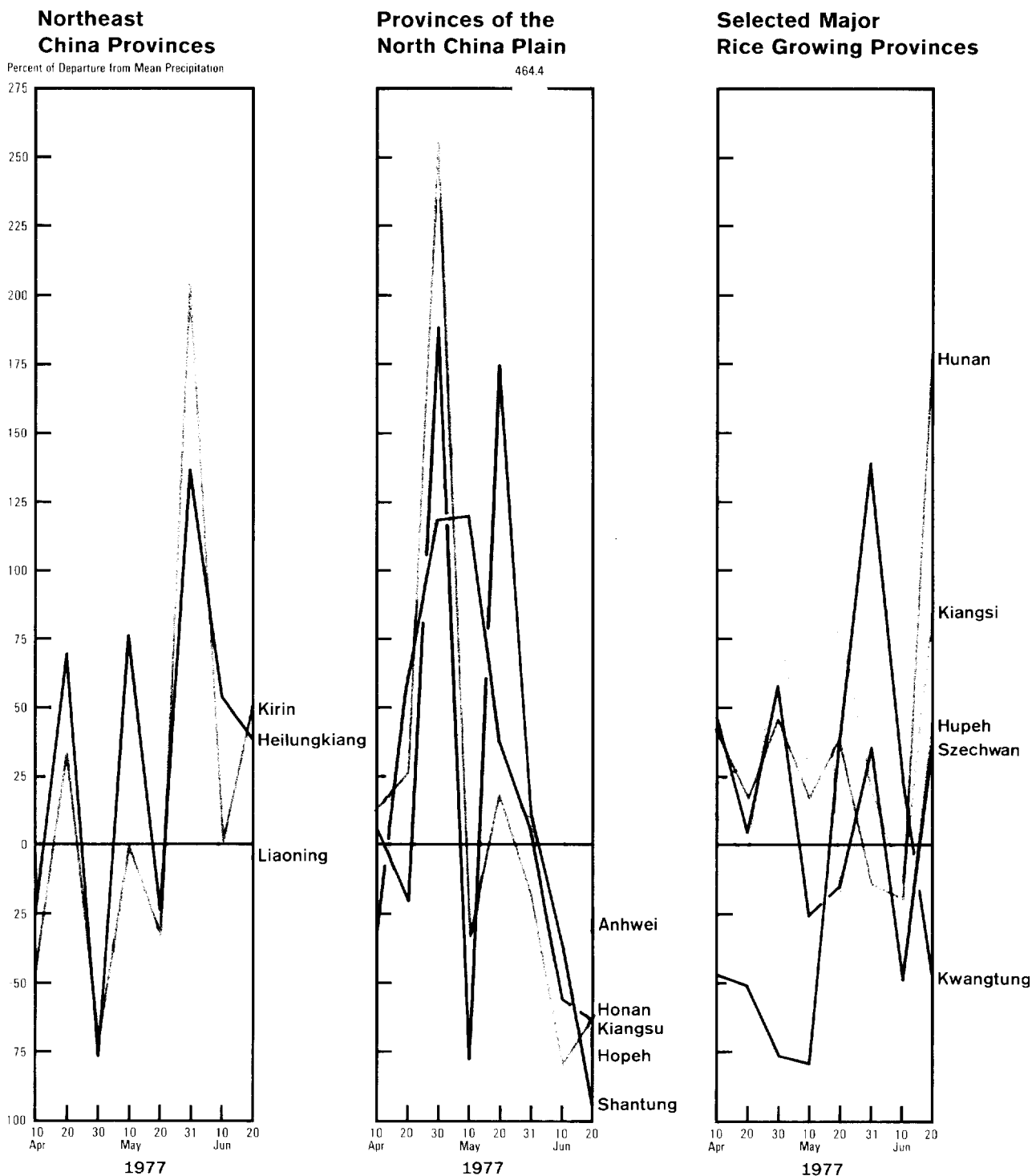
14 May 1977

Winter grain crops (outlined red color) in lowlands adjacent to the streams display strong infrared reflectance indicating vigorous growth.

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# Precipitation Variations from Mean:

Figure 4



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## APPENDIX A

Selected Precipitation Data  
(in millimeters)

Province	<u>Percent of Mean Monthly Precipitation</u>			<u>Total Monthly Precipitation</u>		
	<u>1977</u>			<u>1977</u>		
	<u>April</u>	<u>May</u>	<u>June*</u>	<u>April</u>	<u>May</u>	<u>June#</u>
Anhwei	153.3	163.4	52.1	134.4	162.6	60.2
Chekiang	129.6	159.8	119.2	167.7	251.8	192.0
Fukien	76.0	120.7	133.6	122.8	291.8	246.2
Heilungkiang	94.3	164.1	145.7	21.8	78.2	87.6
Honan	191.0	88.9	28.3	78.9	54.0	14.7
Hopeh	157.9	259.4	64.7	21.0	75.3	25.8
Hunan	134.0	113.4	178.5	205.2	227.0	249.1
Hupei	177.6	144.0	97.2	172.4	168.5	102.3
Kiangsi	127.2	143.4	135.4	264.4	340.8	248.5
Kiangsu	149.3	153.8	39.7	88.8	108.5	38.0
Kirin	66.3	159.9	125.6	16.3	66.5	78.0
Kwangsi	74.9	127.4	110.5	96.2	283.5	193.1
Kwangtung	42.2	133.1	89.0	62.8	322.2	161.3
Kweichow	137.6	151.0	140.4	135.4	246.1	183.1
Liaoning	123.9	103.1	91.0	32.3	57.0	49.9
Shansi	183.0	157.6	85.6	39.8	51.3	27.7
Shantung	132.1	136.4	34.6	33.4	51.4	16.5
Shensi	144.4	94.6	33.3	41.3	44.7	13.3
Szechwan	136.1	98.5	94.0	94.9	107.3	92.0
Yunnan	110.8	59.8	46/9	44.3	78.9	69.6

\* Estimated values for 1-20 June

# Total precipitation received 1-20 June

Values computed from Chinese meteorological data.

Selected Temperature Data  
(in celsius)

<u>Province</u>	<u>Departure from Historical Mean Monthly Temperature</u>			<u>Mean Monthly Temperature</u>		
	<u>1977</u>			<u>1977</u>		
	<u>April</u>	<u>May</u>	<u>June*</u>	<u>April</u>	<u>May</u>	<u>June*</u>
Anhwei	0.7	-1.8	-0.2	16.0	18.8	24.4
Chekiang	0.8	-1.0	-1.1	17.2	20.3	23.7
Fukien	0.1	0.6	-0.6	19.9	23.9	25.6
Heilungkiang	-0.8	1.9	-1.6	4.2	14.6	16.4
Honan	1.3	-1.0	1.3	14.6	17.1	23.0
Hopeh	0.9	-0.8	0.4	13.0	17.1	22.0
Hunan	1.4	-1.2	-1.7	18.1	20.4	23.8
Hupei	1.5	-1.0	-0.3	16.6	18.9	23.8
Kiangsi	-0.1	-0.5	-1.4	17.7	20.9	23.7
Kiangsu	1.3	-1.8	0.1	14.4	17.0	22.5
Kirin	0.3	1.6	-0.5	6.3	14.7	16.8
Kwangsi	0.5	-0.2	-0.5	22.0	25.6	26.7
Kwangtung	0.6	1.2	0.8	23.1	26.9	28.1
Kweichow	-1.6	-1.6	-2.1	17.1	19.5	21.4
Liaoning	0.0	-0.6	-1.1	9.5	16.5	20.0
Shansi	0.6	-1.0	-0.5	12.6	17.7	20.5
Shantung	1.6	-1.4	1.0	14.4	17.7	23.8
Shensi	0.0	-1.6	-1.3	12.2	15.6	20.0
Szechwan	-1.2	-1.4	-1.7	16.5	19.3	22.0
Yunnan	-0.3	1.2	1.7	17.7	21.0	22.7

\* Estimated values for 1-20 June

Values computed from Chinese meteorological data.

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